

IN THE CLAIMS:

1. (Cancelled)

2. (Previously Presented) A panel display apparatus comprising:

a gas discharge panel in which a plurality of pairs of first and second electrodes

5 covered with a dielectric are arranged between a pair of substrates; and

a driving circuit which accumulates a wall charge on the dielectric to write an image, and successively applies a plurality of sustain pulses to the first electrode and the second electrode to perform a sustain discharge in areas where the wall charge has been accumulated,

10 wherein immediately before a leading edge of each sustain pulse, the driving circuit generates a potential difference in the form of a short pulse between the first electrode and the second electrode for a predetermined period that is no more than 100ns,

wherein a polarity of the potential difference in the form of a short pulse is opposite to a polarity of a potential difference generated between the first electrode and the second electrode by the sustain pulse.

15 3. (Previously Presented) The panel display apparatus of Claim 2, wherein an absolute value of a voltage of the short pulse formed by the driving circuit is no smaller than an absolute value of a voltage of the sustain pulse.

4. (Cancelled)

5. (Previously Presented) The panel display apparatus of Claim 3, wherein a time
20 during which the absolute value of the voltage of the short pulse is no smaller than the absolute value of the voltage of the sustain pulse is no more than 50 ns.

6. (Previously Presented) The panel display apparatus of Claim 2, wherein an absolute value of a voltage of the short pulse formed by the driving circuit is no smaller than 1.5 times an absolute value of a voltage of the sustain pulse.

7. (Previously Presented) A panel display apparatus comprising:
5 a gas discharge panel in which a plurality of pairs of first and second electrodes covered with a dielectric are arranged between a pair of substrates; and
a driving circuit which accumulates a wall charge on the dielectric to write the image, and successively applies a plurality of sustain pulses to the first electrode and the second electrode to perform a sustain discharge in areas where the wall charge has been accumulated,
10 wherein immediately before a leading edge of at least a sustain pulse of the plurality of sustain pulses which is first applied, the driving circuit generates a potential difference in the form of a short pulse between the first electrode and the second electrode by applying a voltage to at least one of the first electrode and the second electrode for a predetermined period that is no more than 100ns,
15 wherein a polarity of the potential difference in the form of a short pulse is opposite to a polarity of a potential difference generated between the first electrode and the second electrode by the sustain pulse.

8. (Previously Presented) The panel display apparatus of Claim 7, wherein an absolute value of a voltage of the short pulse formed by the driving circuit is no smaller than an
20 absolute value of a voltage of the sustain pulse.

9. (Previously Presented) The panel display apparatus of Claim 8, wherein a time during which the absolute value of the voltage of the short pulse is no smaller than the absolute value of the voltage of the sustain pulse is no more than 100 ns.

10. (Previously Presented) The panel display apparatus of Claim 8, wherein a time
5 during which the absolute value of the voltage of the short pulse is no smaller than the absolute value of the voltage of the sustain pulse is no more than 50 ns.

11. (Previously Presented) The panel display apparatus of Claim 7, wherein an absolute value of a voltage of the short pulse formed by the driving circuit is no smaller than 1.5 times an absolute value of a voltage of the sustain pulse.

10 12-16. (Cancelled)

17. (Previously Presented) A panel display apparatus for displaying an image in a discharge sustain period, comprising:

a gas discharge panel in which a plurality of discharge cells are arranged in the form of matrix between a pair of substrates; and

15 a driving circuit which applies a write pulse to selected discharge cells of the plurality of discharge cells to write the image, and successively applies a plurality of sustain pulses to each of the plurality of discharge cells to perform a sustain discharge in the selected discharge cells, wherein

an absolute value of a voltage of each sustain pulse which is applied to the
20 discharge cell is higher during a first period than a second period, the first period being a fixed

period from a leading edge of the sustain pulse, and the second period being a period from a lapse of the fixed period to a trailing edge of the sustain pulse,

a highest absolute value of the voltage of the sustain pulse in the first period exceeds an absolute value of a discharge firing voltage of the discharge cell,

5 the absolute value of the voltage of the sustain pulse in the second period is below the absolute value of the discharge firing voltage of the discharge cell, and

a time during which the absolute value of the voltage of the sustain pulse exceeds the absolute value of the discharge firing voltage is no more than 100 ns.

18. (Previously Presented) A panel display apparatus for displaying an image in a
10 discharge sustain period, comprising:

a gas discharge panel in which a plurality of discharge cells are arranged in the form of matrix between a pair of substrates; and

a driving circuit which applies a write pulse to selected discharge cells of the plurality of discharge cells to write the image, and successively applies a plurality of sustain
15 pulses to each of the plurality of discharge cells to perform a sustain discharge in the selected discharge cells, wherein

an absolute value of a voltage of each sustain pulse which is applied to the discharge cell is higher during a first period than a second period, the first period being a fixed period from a leading edge of the sustain pulse, and the second period being a period from a
20 lapse of the fixed period to a trailing edge of the sustain pulse, and

immediately after the trailing edge of the sustain pulse, the driving circuit applies a pulse that is opposite in polarity to the sustain pulse, to the discharge cell for a predetermined period that is no more than 100 ns.

19. (Previously Presented) A panel display apparatus comprising:

5 a gas discharge panel in which a plurality of discharge cells are arranged between a pair of substrates; and

a driving circuit which (a) applies a write pulse to selected discharge cells of the plurality of discharge cells to write an image, and (b) successively applies a plurality of sustain pulses to each of the plurality of discharge cells to perform a sustain discharge in the selected
10 discharge cells,

wherein an absolute value of a voltage of at least a sustain pulse of the plurality of sustain pulses which is first applied to the discharge cell is higher during a first period than a second period, the first period being a fixed period from a leading edge of the sustain pulse, and the second period being a period from a lapse of the fixed period to a trailing edge of the sustain
15 pulse, and

a time during which the absolute value of the voltage of the sustain pulse exceeds an absolute value of a discharge firing voltage of the discharge cell is no more than 100 ns.

20. (Previously Presented) The panel display apparatus of Claim 19,

wherein a highest absolute value of the voltage of the sustain pulse in the first
20 period exceeds the absolute value of a discharge firing voltage of the discharge cell, and

the absolute value of the voltage of the sustain pulse in the second period is below the absolute value of the discharge firing voltage of the discharge cell.

21. (Cancelled)

22. (Original) The panel display apparatus of Claim 19, wherein immediately after the trailing edge of the sustain pulse, the driving circuit applies a pulse that is opposite in polarity to the sustain pulse, to the discharge cell for a predetermined period.

5 23. - 28. (Cancelled)

29. (Previously Presented) A panel display apparatus comprising:

a gas discharge panel in which a plurality of pairs of first and second electrodes covered with a dielectric are arranged between a pair of substrates; and

a driving circuit which accumulates a wall charge on the dielectric to write an
10 image, and successively applies a plurality of sustain pulses to the first electrode and the second electrode to perform a sustain discharge in areas where the wall charge has been accumulated,

wherein immediately after a trailing edge of each sustain pulse, the driving circuit generates a potential difference in the form of a short pulse between the first electrode and the second electrode by applying a voltage to at least one of the first electrode and the second
15 electrode for a predetermined period that is no more than 100 ns,

wherein a polarity of the potential difference in the form of a short pulse is opposite to a polarity of a potential difference generated between the first electrode and the second electrode by the sustain pulse.

30. (Cancelled)

31. (Previously Presented) A driving method for displaying an image in a discharge sustain period in a gas discharge panel in which a plurality of pairs of first and second electrodes covered with a dielectric are arranged between a pair of substrates, comprising:

a writing step for accumulating a wall charge on the dielectric to write the image;

5 and

a discharge sustaining step for successively applying a plurality of sustain pulses to the first electrode and the second electrode to perform a sustain discharge areas where the wall charge has been accumulated,

10 wherein in the discharge sustaining step, immediately before a leading edge of each sustain pulse, a potential difference in the form of a short pulse is generated between the first electrode and the second electrode by applying a voltage to at least one of the first electrode and the second electrode for a predetermined period that is no more than 100 ns,

15 wherein a polarity of the potential difference in the form of a short pulse is opposite to a polarity of a potential difference generated between the first electrode and the second electrode by the sustain pulse.

32. (Previously Presented) A driving method for displaying an image in a discharge sustain period in a gas discharge panel in which a plurality of pairs of first and second electrodes covered with a dielectric are arranged between a pair of substrates, comprising:

a writing step for accumulating a wall charge on the dielectric to write the image;

20 and

a discharge sustaining step for successively applying a plurality of sustain pulses to the first electrode and the second electrode to perform a sustain discharge in areas where the wall charge has been accumulated,

wherein in the discharge sustaining step, immediately before a leading edge of at least a sustain pulse of the plurality of sustain pulses which is first applied, a potential difference in the form of a short pulse is generated between the first electrode and the second electrode by applying a voltage to at least one of the first electrode and the second electrode for a predetermined period that is no more than 100 ns,

wherein a polarity of the potential difference in the form of a short pulse is opposite to a polarity of a potential difference generated between the first electrode and the second electrode by the sustain pulse.

33. (Previously Presented) A driving method for displaying an image in a discharge sustain period in a gas discharge panel in which a plurality of discharge cells are arranged between a pair of substrates, comprising:

a writing step for applying a write pulse to selected discharge cells of the plurality of discharge cells to write the image; and

a discharge sustaining step for successively applying a plurality of sustain pulses to each of the plurality of discharge cells to perform a sustain discharge in the selected discharge cells,

wherein in the discharge sustaining step, an absolute value of a voltage of each sustain pulse which is applied to the discharge cell is higher during a first period than a second period, the first period being a fixed period from a leading edge of the sustain pulse, and the

second period being a period from a lapse of the fixed period to a trailing edge of the sustain pulse, and

a time during which the absolute value of the voltage of the sustain pulse exceeds an absolute value of a discharge firing voltage of the discharge cell is no more than 100 ns.

5 34. (Previously Presented) A driving method for displaying an image in a discharge sustain period in a gas discharge panel in which a plurality of pairs of first and second electrodes covered with a dielectric are arranged between a pair of substrates, comprising:

a writing step for accumulating a wall charge on the dielectric to write the image;

and

10 a discharge sustaining step for successively applying a plurality of sustain pulses to the first electrode and the second electrode to perform a sustain discharge in areas where the wall charge has been accumulated,

 wherein in the discharge sustaining step, immediately after a trailing edge of each sustain pulse, a potential difference in the form of a short pulse is generated between the first
15 electrode and the second electrode by applying a voltage to at least one of the first electrode and the second electrode for a predetermined period that is no more than 100ns,

 wherein a polarity of the potential difference in the form of a short pulse is opposite to a polarity of a potential difference generated between the first electrode and the second electrode by the sustain pulse.

20 35-38. (Cancelled)

39. (Previously Presented) The panel display apparatus of Claim 2,

wherein the driving circuit applies the plurality of sustain pulses alternately to the first electrode and the second electrode, and, immediately before the leading edge of each sustain pulse, applies a short pulse of a same polarity as the sustain pulse to one of the first electrode and
5 the second electrode to which the sustain pulse is to be applied, for the predetermined period that is no more than 100 ns; and

wherein the sustain pulses are applied to scan electrodes and sustain electrodes alternately.

40. (Previously Presented) The panel display apparatus of Claim 2,

10 wherein the driving circuit applies the plurality of sustain pulses alternately to the first electrode and the second electrode, and, immediately before the leading edge of each sustain pulse, applies a short pulse of a same polarity as the sustain pulse to the other one of the first electrode and the second electrode, for the predetermined period that is no more than 100 ns.

41. (New) A gas discharge panel comprising:

15 a plurality of discharge cells having a front substrate and a back substrate;
a plurality of scan electrodes running between the front substrate and the back substrate;

a plurality of sustain electrodes parallel to the plurality of scan electrodes; and
a drive circuit for generating an alternating sustain waveform between the scan
20 electrodes and the sustain electrodes;

wherein the sustain waveform includes a short pulse for reducing wall charge on the discharge cells immediately followed by a sustain pulse of opposite polarity.

42. (New) The gas discharge panel of claim 1 wherein the short pulse has an absolute voltage that is greater than the absolute voltage of the sustain pulse.

43. (New) The gas discharge panel of claim 2 wherein the short pulse has an absolute voltage that is greater than 150% of the absolute voltage of the sustain pulse.

5 44. (New) The gas discharge panel of claim 1 wherein the short pulse has a duration of less than 100 nS.

45. (New) The gas discharge panel of claim 4 wherein the short pulse has a duration of less than 50 nS.

46. (New) The gas discharge panel of claim 4 wherein the absolute voltage of the
10 short pulse is greater than 150% of the absolute voltage of the sustain pulse.